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Human dendritic cells transfected with a human papilloma virus-18 construct display decreased mobility and upregulated cytokine production

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Abstract

The marked depletion of dendritic cells (DCs) in skin cancers, as well as preneoplastic and neoplastic cervical epithelium, suggests a central role for DCs in productive human papillomavirus (HPV) infection and cancer promotion. It has been suggested that HPV may facilitate tumor development by reducing DC density, contributing to a decrease in local immune surveillance. In this study, we have examined the response of human DCs transfected with a construct containing the HPV18 genome and their subsequent expression of papilloma virus proteins. Transfected cells expressed the L1 major capsid protein and upregulated E6 and E7 oncoprotein transcripts as detected by RT-PCR. Transfection of DCs also resulted in a significant increase in cytokine production. Finally, we observed that HPV18 transfection decreased the migratory activity of DCs. Our data indicate that HPV transfection of DCs leads to changes in migratory activity and cytokine production, which potentially can suppress or delay immune responses to viral antigens. Additionally, changes in cytokine production by HPV-transformed human fibroblasts and human cervical epithelial cells revealed that the migratory and antigen-presenting functions of DCs may be impaired by the suppressive effects of cytokines produced by HPV-infected epithelial and stromal cells.

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Keywords

Cytokine, Dendritic cell, Mobility, Papillomavirus